

PATENT CLAIMS

1. Arrangement for obtaining reliable anchoring of a
5 threaded implant (3) in bone substance (1), preferably
dentine, in the human body, the bone substance being
provided with a hole (2) in whose side wall (2b) it is
possible to establish an internal threading (1a) which
10 can cooperate with an external threading (3d, 3d') on
the implant for reliable anchoring and healing-in of
the implant in the bone substance, characterized by one
or a combination of two or all of the following
alternatives:

- a) the implant threading is arranged, particularly in
15 the case of soft bone substance, to force the bone
substance out in essentially radial directions (R) as a
function of the extent to which the implant is screwed
into the hole, the implant threading is arranged to
20 effect greater forcing out of the bone substance at the
outer parts (2c) of the hole than at the inner parts
(2d) of the hole, and the degree of forcing out is
adapted in relation to the softness of the bone
substance in order to achieve the reliable anchoring,
b) along at least part of the longitudinal direction
25 of the implant, the implant threading is given a non-
circular or eccentric configuration (8a-8i) for the
purpose of obtaining improved rotational stability in
soft/weak bone,
c) the implant is provided with a threading which
30 comprises a portion (portions) with two or more thread
spirals (thread entries) which, despite shortening the
time for screwing the implant into the hole, provide a
tight threading which permits effective integration
with the bone substance during the healing-in process.

35

2. Arrangement according to Patent Claim 1,
characterized in that, in the case according to a), the
implant threading is arranged to ensure that the
pressure (P, P') between the bone substance and the

implant has essentially a constant or slightly increasing value during the greater part of the operation of screwing the implant into the hole.

5 3. Arrangement according to Patent Claim 1 or 2, characterized in that in the case according to a), the implant threading comprises a portion (3b) whose thread (3d) has a slight conical narrowing towards the free end (3a) of the implant and extends along most or part
10 of the length (L) of the implant.

4. Arrangement according to Patent Claim 1, 2 or 3, characterized in that the front portion (tip) of the implant is designed with a conical thread (3e) which
15 has a conicity essentially exceeding the conicity of the slightly conical thread (3d).

5. Arrangement according to any of the preceding patent claims, characterized in that in the case
20 according to a), the conicity of the slightly conical thread is chosen between 0.1 - 0.4 mm or has an angle of inclination (α) of about 0.5 - 2°, and/or the thread conicity of the thread at the said portion/tip (3a) is of the order of 0.4 - 0.8 mm or with an angle of
25 inclination (β) of about 10 - 15°, and the portion/tip has a length or height (h) of about 10 - 30% of the length (L) of the threaded part of the implant.

6. Arrangement according to any of the preceding
30 patent claims, characterized in that in case a), an implant with slight conicity of the threading along the longitudinal direction (L) of the implant cooperates with a circular cylindrical hole (2) in the bone (1).

35 7. Arrangement according to Patent Claim 1, characterized in that in the case according to b), the non-circularity or eccentricity is intended to substantially increase the rotational stability of the

implant in the recently inserted state or the incorporated state of the implant.

8. Arrangement according to Patent Claim 7, characterized in that the implant is arranged with a minimum diameter (D') which corresponds to or is slightly greater, for example 1 - 5% greater, than the diameter (d) of the hole.
9. Arrangement according to Patent Claim 1 or any of Patent Claims 7 - 8, characterized in that the tip or free end of the implant has a circular or concentric thread (3e) which merges gradually into a non-circular or eccentric thread on the remaining part or parts of the implant.
10. Arrangement according to Patent Claim 1 or any of Patent Claims 7 - 9, characterized in that the peripheries of the different non-circular or eccentric thread cross-sections have bevelled corners (12) in order to avoid sharp corners.
11. Arrangement according to Patent Claim 1 or any of Patent Claims 7 - 10, characterized in that the non-circularity is arranged such that areas of maximum diameter are displaced in the peripheral direction from one thread turn (10) to the next thread turn (11).
12. Arrangement according to Patent Claim 1, characterized in that in the case according to c), it is intended to counteract deformation or breaking-up of fine bone trabeculae which surround the hole in the bone.
13. Arrangement according to Patent Claim 1, 11 or 12, characterized in that the number of thread spirals/thread entries is two, three or four.

14. Arrangement according to Patent Claim 1, 11, 12 or 13, characterized in that the number of thread spirals/thread entries is adapted to the number of cutting edges (5a, 5b, 5c, 5d) on the implant so that symmetrical cutting forces are obtained.
15. Arrangement according to Patent Claim 1, 11, 12, 13 or 14, characterized in that two thread spirals are arranged on the implant together with two or four cutting edges, or in that three thread spirals are arranged together with three cutting edges, etc.